

*EQ: How do you identify lines from equations, apply the idea of slope, and work with direct variation?*

A **linear equation** gives the graph of a \_\_\_\_\_.

A **linear equation** has two \_\_\_\_\_ with no \_\_\_\_\_.

You can create a \_\_\_\_\_ for any equation to graph it.

If you have a linear equation in \_\_\_\_\_, you

can graph a point and use the slope to graph the rest ( $m$  stands for slope and  $b$  gives the  $y$

coordinate of the coordinate of the  $y$ -intercept).

\_\_\_\_\_ deals with the ratio of change in  $y$  over change in  $x$ ; rise over run.

**Slope equation:**

**Horizontal lines** have slope of \_\_\_\_\_; **vertical lines** have an

\_\_\_\_\_ slope.

A line with a **positive slope** goes \_\_\_\_\_ from left to right, and a **negative slope**

goes \_\_\_\_\_ from left to right.

**Direct proportion** is when both variables \_\_\_\_\_ and gives an

equation \_\_\_\_\_, where  $k$  is the constant of variation.

Example 1: Find the slope of the line passing through (4, 5) and (12, 6). Then describe the line as it move from left to right.

Example 2: Find the slope and y-intercept of the graph of the equation:  $3x + 4y = 5$

Example 3: There are two health clubs on the same street. Club Global charges a sign-up fee of \$60 and then \$20 per month. Club Local had no sign-up fee, but charges \$30 per month.

a. Write an equation for the cost  $C$  of using each health club for  $m$  months.

b. Rewrite the equations using  $x$  as the independent variable  $y$  as the dependent variable.

c. What is the slope of the line representing the cost of Club Global? Club Local?

d. What do the slopes represent?

e. What is the y-intercept of each graph?

f. What do the y-intercepts represent?

g. What is the cost of membership at each club for 6 months?

Example 4: Decide whether the relationship shows a direct variation. If it does, write the constant of variation and an equation of variation.

a.

<b>Miles Driven <math>x</math></b>	23	46	69	92
<b>Gallons Used <math>y</math></b>	1	2	3	4

b.

<b>Miles Driven <math>x</math></b>	20	40	60	80
<b>Gallons Used <math>y</math></b>	280	260	240	220